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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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(54) Title: **POLYACRYLATES COATINGS FOR IMPLANTABLE MEDICAL DEVICES**

(57) Abstract: A coating for a medical device, particularly for a drug eluting stent, is described. The coating can include a polyacrylate, a blend of polyacrylates, or a blend of the polyacrylate with other polymers, for example, poly(ethylene-covinyl alcohol).

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 03/15544

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61L31/10 A61L27/34

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, CHEM ABS Data, PAJ, WPI Data, BIOSIS, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	"ROLLING THERAPEUTIC AGENT LOADING DEVICE FOR THERAPEUTIC AGENT DELIVERY OR COATED STENT" RESEARCH DISCLOSURE, KENNETH MASON PUBLICATIONS, HAMPSHIRE, GB, no. 434, June 2000 (2000-06), page 975, XP000980708 ISSN: 0374-4353 *entire document*	1,2,4,5
X	NOVICK, SCOTT J. ET AL: "Protein-containing hydrophobic coatings and films" BIOMATERIALS (2001), VOLUME DATE 2002, 23(2), 441-448, XP002252591 *abstract*	1,2,4,5 -/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the International filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the International filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

3 September 2003

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 03/15544

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00/29043 A (HABERBOSCH WERNER ; JUSTUS LIEBIG UNI GIESSEN (DE); CHRISTOPHE BURE) 25 May 2000 (2000-05-25) claims 1-26 examples 1-4	1-5
X	US 2001/014717 A1 (HOSSAINY SYED F A ET AL) 16 August 2001 (2001-08-16) '0031!-'0042!, '0080! claims 1-36	1,2,4,5
X	WO 99/55396 A (SURMODICS INC) 4 November 1999 (1999-11-04) page 4, line 1 - page 8, line 30 example 1	1-9
X	WO 02/24249 A (BINDERMAN ITZHAK ; KOOLE LEVINAS H (NL)) 28 March 2002 (2002-03-28) page 4, line 5 - line 30 page 6, line 26 - page 8, line 11 page 12, line 1 - line 27 page 16, line 5 - page 17, line 8	1,2,4,5
Y		3
X	US 6 110 483 A (ZHANG XIANPING ET AL) 29 August 2000 (2000-08-29) column 3, line 65 - column 6, line 16 claims 1-40	1-8
P,X	WO 03/022324 A (ABBOTT LAB) 20 March 2003 (2003-03-20) page 16, line 19 - page 17, line 22	1,2,4,5
Y		3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/15544

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-9

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-9

A coating for an implantable medical device, comprising a thermoplastic polyacrylate material free from acetate species and a therapeutically active agent incorporated therein.

2. claims: 10-27

A coating for an implantable medical device, the coating comprising a first layer having an active agent incorporated therein and a second layer disposed over the first layer, wherein the second layer comprise a thermoplastic polyacrylate material for modifying the rate of release of the agent.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US 03/15544

Patent document cited in search report	Publication date		Patent family member(s)	Publication date
WO 0029043	A 25-05-2000		FR 2785812 A1 AU 1168100 A CA 2349930 A1 EP 1131113 A1 WO 0029043 A1 JP 2002529203 T US 6517858 B1	19-05-2000 05-06-2000 25-05-2000 12-09-2001 25-05-2000 10-09-2002 11-02-2003
US 2001014717	A1 16-08-2001		US 2002193475 A1 EP 1347792 A2 WO 02058753 A2 AU 2449601 A CA 2395199 A1 EP 1242130 A1 JP 2003517890 T WO 0145763 A1 US 2001018469 A1 AU 4197401 A WO 0174415 A1	19-12-2002 01-10-2003 01-08-2002 03-07-2001 28-06-2001 25-09-2002 03-06-2003 28-06-2001 30-08-2001 15-10-2001 11-10-2001
WO 9955396	A 04-11-1999		AT 219693 T AU 760408 B2 AU 3563899 A CA 2320259 A1 DE 69901927 D1 DE 69901927 T2 DK 1019111 T3 EP 1174157 A1 EP 1019111 A1 ES 2179646 T3 JP 3406903 B2 JP 2002512856 T PT 1019111 T WO 9955396 A1 US 2003031780 A1 US 6214901 B1 US 6344035 B1 US 2002032434 A1	15-07-2002 15-05-2003 16-11-1999 04-11-1999 01-08-2002 10-10-2002 14-10-2002 23-01-2002 19-07-2000 16-01-2003 19-05-2003 08-05-2002 31-10-2002 04-11-1999 13-02-2003 10-04-2001 05-02-2002 14-03-2002
WO 0224249	A 28-03-2002		AU 2095002 A WO 0224249 A2 US 2002065551 A1	02-04-2002 28-03-2002 30-05-2002
US 6110483	A 29-08-2000		AU 8159898 A CN 1261288 T EP 1003571 A2 JP 2002506369 T WO 9858690 A2	04-01-1999 26-07-2000 31-05-2000 26-02-2002 30-12-1998
WO 03022324	A 20-03-2003		US 2002123505 A1 WO 03022807 A2 WO 03022324 A1 US 2003129215 A1	05-09-2002 20-03-2003 20-03-2003 10-07-2003